Residential, Commercial and Industrial (RCI) Technical Work Group Teleconference Meeting #1

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ADEQ Arizona Department of Environmental Quality

CCS CENTER FOR CLIMATE STRATEGIES

Today's Agenda

- Call to order
- Introduction of Technical Work Group members
- Review of Technical Work Group organization and logistics
- Review of Open Meeting Law Requirements
- Review and discussion of the draft Arizona greenhouse gas emissions inventory and forecast for RCI sectors
- Review and discussion of list of potential state actions
- Discussion of next steps toward identification of priorities for analysis of options
- Call to the public
- Proposed agenda items for next meeting
- Announcements

RCI Technical Working Group Members

- Suzanne Culp – Arizona League of Conservation Voters
- Ken Evans (for Kevin Kinsall) – Phelps Dodge
- Anthony Floyd – City of Scottsdale
- Grady Gammage, Jr. – Gammage and Burnham
- Jeff Homer – General Dynamics
- Glenn McGinnis – Arizona Clean Fuels
- Lisa McNeilly – Xanterra South Rim, LLC
- Tim Mohin – Intel Corporation
- Don Netko – Freescale Semiconductors
- Amanda Ormond – The Ormond Group
- Suzanne Pfister – St. Joseph's Hospital
- Jeff Schlegel – Southwest Energy Efficiency Partnership (SWEEP)
- Sean Seitz – Arizona Solar Energy Industry Association
- Penny Allee Taylor – Southwest Gas
- Richard Tobin – Lewis and Rocha
- Bill Williams – Resolution Copper

Agenda Items 1-4

- Call to order
- Introduction of Technical Work Group members
- Review of Technical Work Group organization and logistics
- Review of Open Meeting Law Requirements

Agenda Item 5

- Review and discussion of the draft Arizona greenhouse gas emissions inventory and forecast for our sector

Arizona GHG Emissions

- Inventory and Reference Case Projections
  - Initial analysis by CCS for further discussion and revision
    - Inventory of historical emissions from 1990 to most recent data year (2000-2004, depending on sector)
    - Projection of emissions to 2020

Coverage

- Six gases per USEPA and UNFCCC guidelines
  - Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O, Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF6)
  - Black Carbon considered separately
- All major emitting sectors
  - Electricity
  - Residential, Commercial, Industrial Fuel Use
  - Transportation
  - Agriculture and Forestry
  - Industrial Processes and Other Sources

Inventory Approach

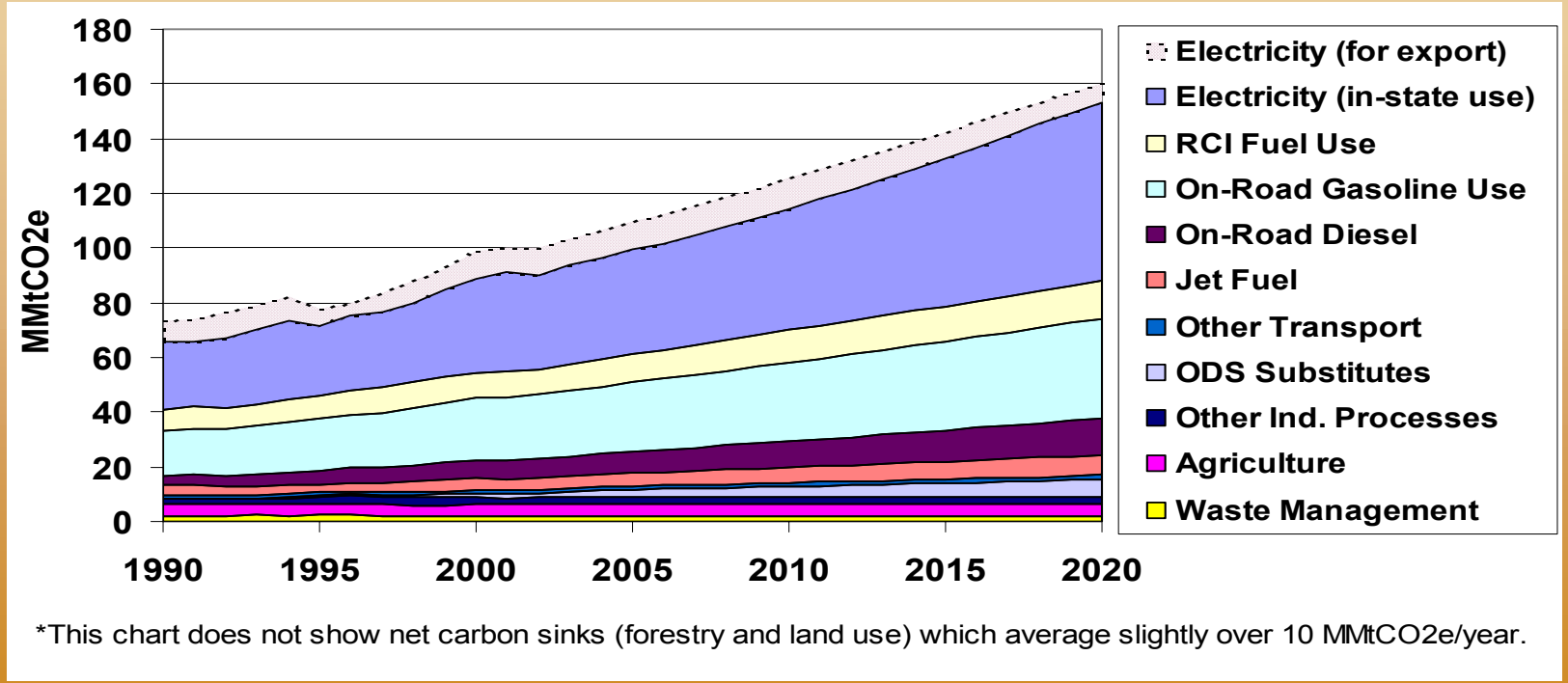
- Standard US EPA and UN methodologies, guidelines, and tools
- Emphasis on transparency, consistency, and significance
- Preference for Arizona or regional data, where available
- Consumption and production-basis emissions from electricity generation
  - Very simplified approach used for initial analysis

Projection Approach

- Reference case assumes no major changes from business-as-usual
  - Includes approved policies and actions to the extent possible (e.g. Environmental Portfolio Standard)
- Growth assumptions from existing sources
  - Electricity demand growth from AZ Corporation Commission
  - Population and economic forecasts from AZ Department of Economic Security
  - Several assumptions from US DOE's Annual Energy Outlook 2005

Arizona GHG Emissions

- 1990-2020



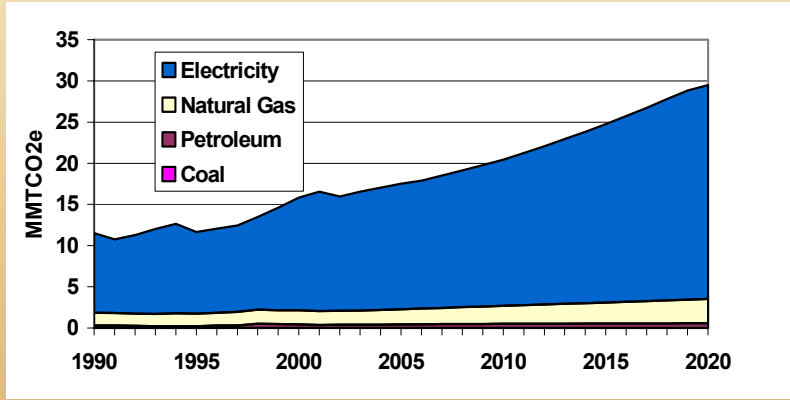
*This chart does not show net carbon sinks (forestry and land use) which average slightly over 10 MMtCO2e/year.

Work group issues

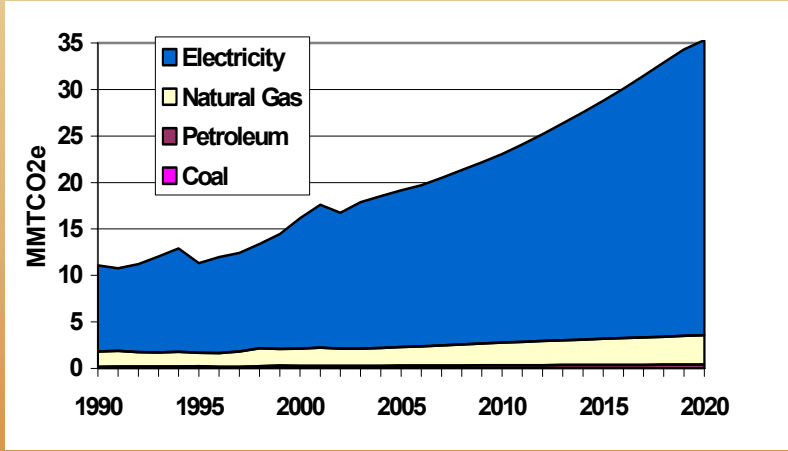
- Growth in activity (e.g. housing starts), fuel and electricity use
- Closer assessment of process emissions (semiconductors, cement) and waste management
- Emissions implications of new refinery
- Future of mining industry and other industrial fuel users
- Electricity – emissions based on AZ average emission rate for electricity generation

RCI

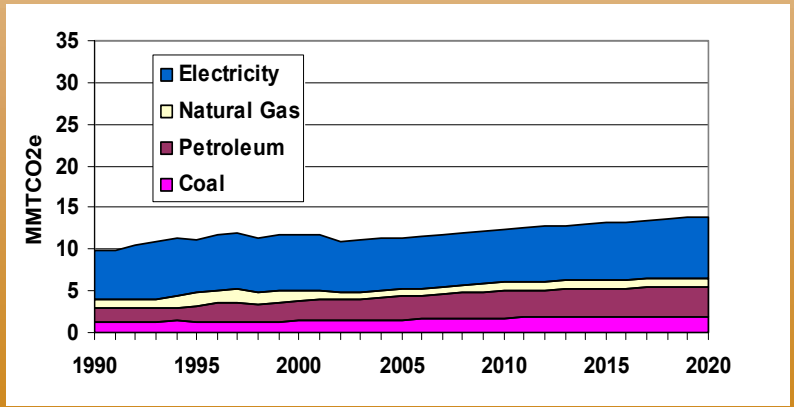
Commercial Sector



Residential Sector



Industrial Sector



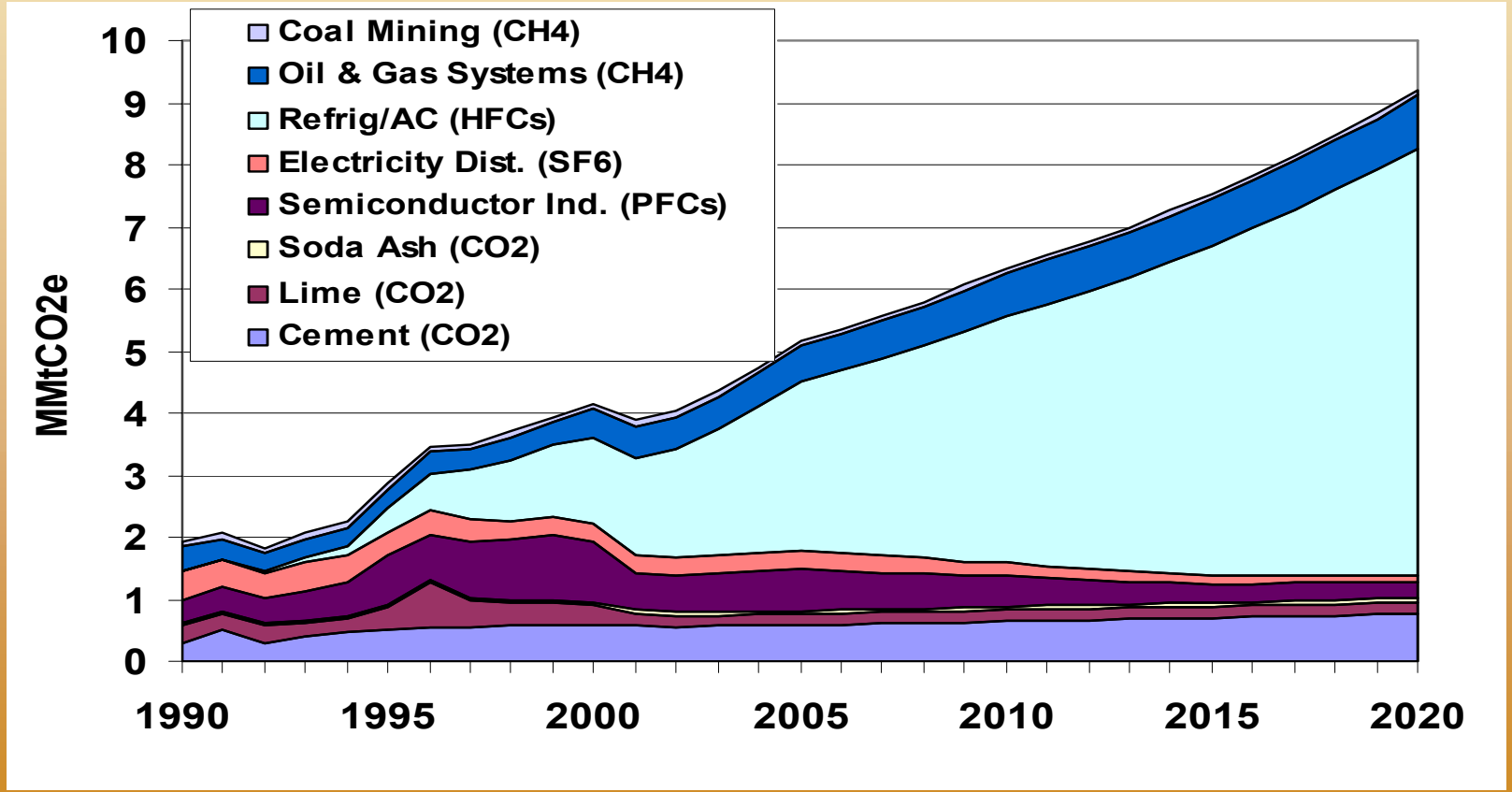
RCI

- Data Sources
  - US DOE Energy Information Administration
    - NEMS Annual Energy Outlook 2005
    - State Energy Data System – historic consumption
- Methods
  - NEMS regional growth rates scaled by Arizona population and economic growth projections

RCI

- Key Assumptions and Uncertainties
  - New refinery and cement plants not yet considered
  - Oil, gas, and coal use growth scaled to Arizona from US DOE regional projections
    - Natural gas growth rates should be informed by in-state gas companies consumption
    - Oil product use can vary significantly over time

Industrial Process



Industrial Process

- Data sources include
  - US Geological Survey
  - US Office of Pipeline Safety
  - US EPA National Inventory of GHG emissions & US Climate Action Report
- Methods
  - Based on US EPA state GHG inventory tool

Industrial Process

- Key assumptions and uncertainties
  - Growth rates
    - HFC and PFC – based on national projections (US EPA 2002 Climate Action Report)
    - Cement and soda ash – based on population
    - lime manufacture, limestone and dolomite and coal mining – assume no growth

Waste Management

(Million Metric Tons CO2e)	1990	2000	2010	2020
Waste Management	**2.1**	**1.9**	**2.0**	**1.9**
Solid Waste Management	1.7	1.3	1.4	1.1
Wastewater Management	0.4	0.5	0.7	0.8

Waste Management

- Data sources
  - Biocycle magazine
  - Information collected by US EPA from state solid waste offices for State GHG Inventory Tool
- Key assumptions and uncertainty
  - solid waste emissions projections based on national EPA projections (adjusted for AZ population growth)
  - wastewater emissions grow with population

Agenda Item 6

- Review and discussion of list of potential state actions
  - comprehensive approaches
  - residential – equipment, buildings, other
  - commercial – equipment, buildings, other
  - industrial – efficiency, low GHG fuels, other
  - high GWP Gas emissions
  - waste management

Decision criteria

- GHG reduction potential
- Cost effectiveness
- Co-benefits and ancillary impacts
- Feasibility issues

Agenda Item 7

- Discussion of next steps toward identification of priorities for analysis of options

Agenda Item 8

- Call to the public

Agenda Item 9

- Proposed agenda items for next meeting
  - Continued development of priorities for analysis?
  - Continued discussion of inventory and reference case?

Agenda Item 10

- Announcements